

ALBA 40 UNIVERSAL

Three-valve, plus rectifier, superhet with built-in frame aerials for operation from AC or DC mains. Made by A. J. Balcombe, Ltd., 52, Tabernacle Street, London, EC2.

THE frame aerials, L1 (MW) and L2 (LW) are directly connected to the grid of the frequency changer valve, V1. They are tuned by the VC1 section of the double-gang condenser, the long wave winding having an additional capacity, C2, across it. C1 is the isolating condenser and HF return capacity for the grid circuit, which is connected to the AVC line.

V1 obtains standing bias from the cathode resistor, R1, which is decoupled by C3. The screening grid is fed from the HT line through R3, which is decoupled by C5. R3 is also the voltage dropper for

the anode of the oscillator section of V1, the anode circuit being completed through the reaction windings, L4 (MW) and L6 (LW). The oscillator coil assembly has iron-dust cores, the tuned grid windings being L3 (MW) and L5 (LW). The grid leak and condenser are R2 and C4.

The IF signal is transferred from V1 anode circuit by the iron-dust core transformer, L7 and L8. V2 is the IF amplifier and has AVC applied to it as well as being biased by the cathode resistance, R4, decoupled by C7.

A second IF transformer, similar to the first, but with a tapping on the secondary winding, L10, couples the output of V2 to the diodes of the double diode pentode, V3. The signal diode load is R6, R5 and C8 being the IF filter. The LF signal developed across R6 is coupled by C10 to the volume control, R7, and thence to the control grid of the pentode section of V3.

The AVC diode is fed from the same tapping on L10, but through the condenser, C11, the load resistances being R9 and R10. A potential obtained from this network is fed to V1 via R11 decoupler and to V2 via R8 and C6 decoupling components.

Bias for V3 is derived from the cathode resistor, R12, which is decoupled by C12.

The low impedance permanent magnet speaker is coupled to the output of V3 by the transformer L11 and L12. C13 is the tone correcting condenser.

The HT current is obtained from the half-wave rectifier, V4, and is smoothed by the choke, L14, and condensers, C14 and C15.

The heater circuit is controlled by the barretter, all the heaters being in series.

The mains are HF filtered by the chokes L15, L16 and the condenser C16.

GANGING

IF Circuits.—Inject a 370 kcs signal into the grid of V1, shorting out VC2. Adjust T1, T2, T3 and T4 for maximum output.

MW Band.—Inject a 250-metre signal into the aerial and earth sockets and tune receiver to this input. Adjust T5 and T6 for maximum output.

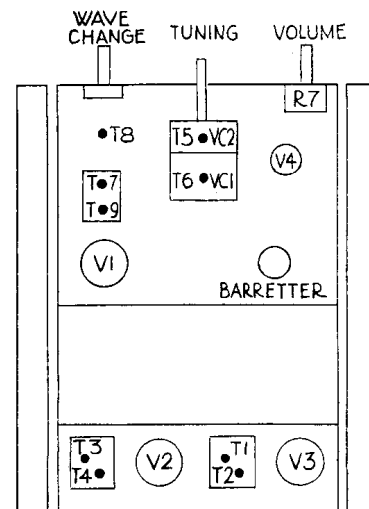
Inject and tune-in a 500 metre signal and adjust T7 for maximum output.

Repeat adjustments for best results.

LW Band.—Switch to LW, inject and tune-in a 1,200 metre signal. Adjust T8 for maximum output.

Inject and tune-in a 1,900 metre signal and adjust T9 for maximum output.

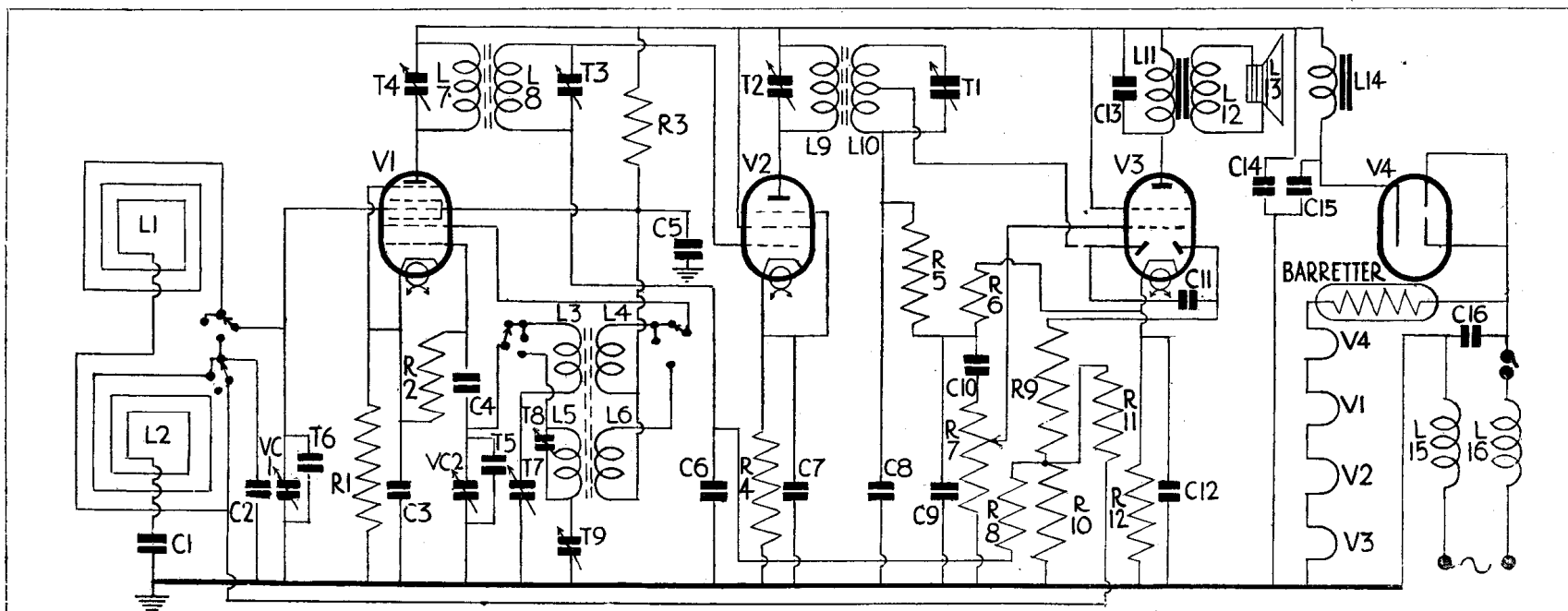
Repeat operations until no further improvement is effected.



Layout diagram identifying the valves and trimmers.

RESISTANCES

| R | Ohms | R | Ohms |
|---|--------|----|---------|
| 1 | 250 | 7 | 500,000 |
| 2 | 50,000 | 8 | 1 meg |
| 3 | 20,000 | 9 | 500,000 |
| 4 | 200 | 10 | 500,000 |
| 5 | 50,000 | 11 | 1 meg |
| 6 | 1 meg | 12 | 170 |



The circuit is a three-valve superhet arrangement plus half-wave rectifier for AC or DC operation. The grid coils of V1 form a frame aerial, remaining coils having iron dust cores. V2 is the IF amplifier and V3 a combined double diode and output pentode.

CONDENSERS

| C | Mfds | C | Mfds |
|---|---------|----|---------|
| 1 | .1 | 9 | .0002 |
| 2 | 75 mmfd | 10 | .05 |
| 3 | .1 | 11 | 10 mmfd |
| 4 | .0001 | 12 | .25 |
| 5 | .1 | 13 | .005 |
| 6 | .1 | 14 | .24 |
| 7 | .1 | 15 | .8 |
| 8 | .0002 | 16 | .1 |

WINDINGS

| L | Ohms | L | Ohms |
|---|------|----|----------|
| 1 | 1 | 9 | 8.5 |
| 2 | 14 | 10 | 8.5 |
| 3 | 2 | 11 | 500 |
| 4 | 7.25 | 12 | Very low |
| 5 | 8 | 13 | 3 |
| 6 | 7.5 | 14 | 120 |
| 7 | 8.5 | 15 | 4 |
| 8 | 8.5 | 16 | 4 |

VALVE READINGS

| V | Type | Electrode | Volts | Ma |
|---|----------------|------------|-------|-----|
| 1 | FC13 (MET) | Anode | 245 | 2.5 |
| | | Osc anode | 50 | 3 |
| | | Screen | 90 | 5.4 |
| 2 | VP13C (MET) | Anode | 245 | 12 |
| | | Screen | 245 | 4 |
| 3 | PEN40DD | Anode | 225 | 4.8 |
| | | Screen | 245 | 8.2 |
| 4 | UR1C Barretter | Rectifier | | |
| | | Philips C1 | | |